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Pakistan

The 6th Regional Forum for Sustainable Agricultural Mechanization in Asia and the Pacific
- Enabling Environment for the Private Sector
25 October 2018, Wuhan, China
6th Regional Forum on Sustainable Agricultural Mechanization in Asia and the Pacific on the Theme of “Enabling Environment for the Private Sector”
(25-28 October, 2018 Wuhan, China)

Presented by
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CS-II/Director General
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Facts About Pakistan Agriculture (1)

Total Area 79.61 million ha
Cultivated Area 22.08 million ha
   Irrigated 87.3%
   Rainfed 12.7%
Population 207.8 million
Rural Population 64%
Rainfall (mm) 127 ~ 1250
Two Cropping Seasons
   Rabi (October – March)
   Kharif (April – September)
Pakistan has diverse landscapes:
- high mountain ranges of the Himalayas, Karakorams and Hindu Kush,
- snow-covered peaks, eternal glaciers, and the intermountain valleys in the north,
- snow and glacier melt keeps the Indus Basin rivers perennial
- vast rich irrigated plains in the Indus basin
- undulating highly vulnerable agri. areas of rainfed Pothwar
- stark deserts and rugged rocky expanse of plateaus in the south-west of Baluchistan
Contribution of different Sectors in GDP

Total Size of the Economy : US$ 300 Billion

Services Sector 60.23%

Agriculture Sector 18.86%

Industrial Sector 20.91%

Source: Pakistan Economic Survey 2017-18
### Agriculture in National Economy

<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contribution to GDP</td>
<td>18.86%</td>
</tr>
<tr>
<td>Labour force employed</td>
<td>42.3%</td>
</tr>
<tr>
<td>Provides Livelihood to rural population</td>
<td>64%</td>
</tr>
<tr>
<td>Average Growth rate in last 5 years</td>
<td>2.8%</td>
</tr>
<tr>
<td>Share of agriculture in total exports</td>
<td>57.3%</td>
</tr>
</tbody>
</table>

**Sectoral Share in Agri. GDP**

- **Crops**: 6.96%
- **Livestock**: 11.11%
- **Forestry**: 0.39%
- **Fisheries**: 0.40%

**Source:** Economic Survey of Pakistan 2017-18
Export Pattern (%) 2016-17

Source: Pakistan Economic Survey
## Area, Production and Yield of Major Crops, 2017-2018 (P)

<table>
<thead>
<tr>
<th>Crop</th>
<th>Area (‘000’ ha)</th>
<th>Production (‘000’ tonnes)</th>
<th>Yield (kg/ha)</th>
<th>World Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat</td>
<td>8,734</td>
<td>25,492</td>
<td>2,919</td>
<td>8th</td>
</tr>
<tr>
<td>Cotton</td>
<td>2,699</td>
<td>11,935*</td>
<td>752**</td>
<td>4th</td>
</tr>
<tr>
<td>Rice</td>
<td>2,899</td>
<td>7,442</td>
<td>2,567</td>
<td>13th</td>
</tr>
<tr>
<td>Sugarcane</td>
<td>1,313</td>
<td>81,102</td>
<td>61,768</td>
<td>5th</td>
</tr>
<tr>
<td>Maize</td>
<td>1,229</td>
<td>5,702</td>
<td>4,640</td>
<td>--</td>
</tr>
</tbody>
</table>

*P: Provisional  * '000’ bales  ** Lint

Source: Economic Survey of Pakistan 2017-18
Export Volume of Rice

• Total rice export of 4.023 million metric tons amounting 2 billion dollar in Fiscal Year: 2018

• Total rice export of 3.44 million metric tons amounting to $ 1.6 billion in Fiscal Year: 2017

• Significant growth of 27.7 percent in terms values and 17 percent in terms of quantity during 2018

Source: Rice Exporters Association of Pakistan
Private Sector (Actors)

- Machinery Manufacturers
- Traders and Dealers
- Service Providers
- Financial Institutions – ZTBL and other Schedule Banks etc.
Private Sector (Constraints and Challenges)

- **Technical** (Design, trained manpower and Standardization etc.)
- **Financial** (Working capital and sales cash recovery etc.)
- **Environmental** (Smoke and health hazards etc.)
- **Socio-Cultural** (Remote farmers are hesitant to take credits and borrowing etc.)
- **Attitudinal** (Reluctant to interact with government institutions etc.)
Flow Chart

Demand from different farmers’ associations

Annual seminars, meetings of all relevant departments

Decision at Policy Maker

Survey to finalize technical and social parameters

Technology Search

Available Worldwide

Test & Trial

Modification

Not Available

Design

Prototype development

Testing & Evaluation

Field Demonstration

Manufacturer’s Selection

Investment of Technology Promoters, investors

Promotion of Technology

Traders, Service Providers
Case Study:
Successful Introduction of Throw-in Type Rice Thresher in Pakistan

- Rice is an important food as well as cash crop
- Second major exportable commodity after cotton
- Basmati varieties were grown in Punjab rice grown areas
- Conventional harvesting and threshing operations stand substantially mechanized in Punjab
- In Sindh and Balochistan Coarse/IRRI rice varieties were grown, which were harvested manually and threshed with conventional methods, which caused high grain losses
- PARC intervened in resolving this important rice threshing issue of Sindh and Balochistan
Important Issues

- Inefficient threshing practices
- Delayed threshing due to non-availability of threshing machinery
- High grain losses due to conventional threshing
- Poor grain quality and labour intensive operations
An Axial flow rice thresher manufactured by M/s Kaset Patana Co. Ltd, Thailand was identified and imported.

Unit was commissioned at NARC.

Preliminary testing: Rice Research Institute, Kala Shah Kaku, Lahore.

Field tested at RRI, Dokri, Larkana, Sindh.

TECHNOLOGY HIGHLIGHT

Output Capacity: 1.5 to 2 t/h

Power Requirement: < 65 HP Tractor

Fuel Consumption: 6.5 to 7.5 l/h

Labour requirement: 4 persons

Cleaning Efficiency: > 99%

Grain Breakage: < 1%
Technology Intervention (2)  
2002-03

Enlisted Modifications:
- Redesigning of drive system for recycling auger
- Redesigning of clutch system for power engagement

Manufacturing of First Prototype Unit in Pakistan:
- M/s Mughal Engineering Industries, Larkana manufactured one prototype unit under technical assistant of FMI Engineers
- Five more unit were manufactured during the same year
Technology Intervention (1)  
2003-04

A) PARC signed MoU with following six local manufacturers:
   1. M/S Millat Agro-Industries, Factory Area, Rahim Yar Khan
   2. M/S National Engineering, Sargodha Road Near Railway Station, Nawab Shah
   3. M/S Mughal Engineering Industries, Larkana
   4. M/S Super Fine Industries, Samundri Road Faisalabad
   5. M/S Punjab Engineering Company, Samundri Road, Faisalabad
   6. M/S Millat Tractors representative Co., Lahore

B) About 100 units were manufactured and sold out by above collaborative manufacturers to rice farmers
Technology Intervention (2)  
2003-04

**DEMO Areas:**  
Lower Sindh: Thatta and Badin areas  
Upper Sindh: Larkana, Jacobabad and Shikarpur areas  
Balochistan: Jaffarabad and Nasirabad area

**Stakeholders:**  
Farmers, rice growers, machinery manufacturers and dignities participated in the events and showed keen interest in adoption of new technology
Technology Intervention
2004-05

- 450 more units were manufactured and sold out to farmers
- Provided services for pre-delivery inspection of locally manufactured units
- More than 500 units were operated in Sindh and Balochistan
- About 20% crop was threshed with these machines
- 30 to 40 thousand tonnes of grain was saved due to mechanical threshing
- Tested at local Basmati varieties at RRI, Kala Shah Kaku, Lahore
- Demonstrated in Punjab: Gujranwala, Shiekhupura and Sialkot
- Feedback survey conducted in Sindh and Balochistan for technology status and benefits
Rice Thresher Year-Wise Operating Units in Pakistan
## Economic Benefit of Rice Thresher (Rs in Million)

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of Total Operative Thresher Unit</th>
<th>Economic Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>39</td>
<td>36</td>
</tr>
<tr>
<td>2004</td>
<td>194</td>
<td>180</td>
</tr>
<tr>
<td>2005</td>
<td>622</td>
<td>576</td>
</tr>
<tr>
<td>2006</td>
<td>985</td>
<td>912</td>
</tr>
<tr>
<td>2007</td>
<td>1320</td>
<td>1,222</td>
</tr>
<tr>
<td>2008</td>
<td>1347</td>
<td>1,247</td>
</tr>
<tr>
<td>2009</td>
<td>2122</td>
<td>1,965</td>
</tr>
<tr>
<td>2010</td>
<td>4371</td>
<td>4,048</td>
</tr>
<tr>
<td>2011</td>
<td>5008</td>
<td>4,637</td>
</tr>
<tr>
<td>2012</td>
<td>5474</td>
<td>5,069</td>
</tr>
<tr>
<td>2013</td>
<td>5601</td>
<td>5,186</td>
</tr>
<tr>
<td>2014</td>
<td>5770</td>
<td>5,342</td>
</tr>
<tr>
<td>2015</td>
<td>5898</td>
<td>5,461</td>
</tr>
<tr>
<td>2016</td>
<td>6000</td>
<td>5,556</td>
</tr>
<tr>
<td></td>
<td><strong>Total Accumulative Impact</strong></td>
<td><strong>41,439</strong></td>
</tr>
</tbody>
</table>

1 US$ = 133 Pak Rupees
THANKS